

PATENT CLAIMS

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1. Method for securing a spacer (2) to a firmly integrated implant (4), preferably in the jaw bone (5), by means of a holder (1) and by means of a screw whose threaded part will extend through a recess in the spacer so that its thread cooperates with the thread (4c) of the implant, and whose head can cooperate with a tightening and locking surface in the spacer, which also has a bearing surface which can cooperate with a top surface of the implant, characterized in that the screw (3), in its position passing through the spacer, and the said spacer (2) are first held together in a rotationally fixed manner in the holder (1), with the bearing surface of the spacer protruding beyond the holder, and the threaded part protruding beyond the bearing surface, in that the rotationally fixed unit thus established by the holder, the spacer and the screw is applied to the implant in the position of cooperation (7) of the said threads and the unit is given rotating movements (8) during which the thread of the screw is screwed down into the thread of the implant, and in that at a predetermined position of screwing, preferably where the cooperation between the bearing surface of the spacer and the top surface (4b) of the implant is established, the holder is separated from the spacer and the screw by means of movement(s) which is (are) preferably distinct from the rotating movement, whereupon the screw head is exposed for possible further tightening.

2. Method according to Patent Claim 1, characterized in that to achieve the holding function between holder (1), spacer (2) and screw (3) to form a common rotationally fixed unit, the screw is applied in the spacer to a position where its head (3c) bears against the tightening and locking surface (2d) of the spacer, and in that the spacer and screw thus combined

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are applied in an end recess (1e, 1f) in the holder or the holder is pressed over the spacer and the screw for obtaining the rotationally fixed function.

3. Method according to Patent Claim 2, characterized in that the holder works with an elastic and/or spring function and/or snap-in function, by means of which the spacer and the screw, in their coupled position, are locked to the holder in the direction of rotation.

10 4. Method according to Patent Claim 2, characterized in that the spacer, while being screwed in by means of the screw, is brought into cooperation with the top surface (4b) of the implant only via an annular end surface (2a).

15 5. Arrangement with holder (1) for arranging a spacer on a firmly integrated implant (4), preferably in the jaw bone (5), by means of a screw (3) whose threaded part (3a) will extend through a recess in the spacer so that its thread cooperates with the thread
20 (4c) of the implant, and whose head can cooperate with a tightening and locking surface in the spacer, which also has a bearing surface (2a) which can cooperate with a top surface of the implant, characterized in that before the screw is introduced into the thread of
25 the implant, the holder supports the screw in its position passing through the spacer, and supports the spacer in a rotationally fixed manner, with the bearing surface of the spacer protruding beyond the holder (1), and the threaded part of the screw protruding beyond
30 the bearing surface, and in that a rotationally fixed unit thus established by the holder, the spacer and the screw can be applied to the implant in a position of cooperation between the threads of the implant and of the screw, where screwing of the screw thread into the
35 implant thread can be effected by means of a rotating or screwing movement (8) of the unit, and in that the holder, in a given screwing position, preferably where the bearing surface (2a) of the spacer cooperates with

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the top surface of the implant, is arranged to be separable from the spacer and the screw by means of a separating movement which is preferably distinct from the rotating movement, whereupon the screw head is exposed for possible further tightening.

6. Arrangement according to Patent Claim 5, characterized in that, at least in its part (1b) which can cooperate with the spacer and the screw, the holder is made of plastic or other elastic and/or resilient material, and in that the screw and the spacer, in the said coupled position, can be applied in an end recess (1e, 1f) in the said holder part (1b) receiving the screw and the spacer via a function preventing reciprocal rotating movements between spacer, screw and holder, obtained, for example, from clamping or spring function and/or guide surfaces and/or snap-in function, etc.

7. Arrangement according to Patent Claim 5 or 6, characterized in that the holder or holder part (1b) is provided with a first recess (1f) for the screw head and a second recess (1e) for one or more securing parts (1g) on the spacer, and the holder can be applied on the securing part or securing parts and the screw head and secures the spacer and the screw by means of elasticity or resilience in the wall-supporting material of the first and second recesses.

8. Arrangement according to any of Patent Claims 5 to 7, characterized in that the holder consists of or comprises an elongate part (1a, 1b) made of plastic or equivalent material.

9. Arrangement according to any of Patent Claims 5 to 8, characterized in that the holder is comparatively easily separable from the spacer and the screw, in their position applied in or firmly screwed to the implant, by means of a withdrawal movement which essentially coincides with the longitudinal direction (1h) of the implant or with a rotating movement which is distinct from the screwing movement.

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10. Arrangement according to any of Patent Claims 5 to 9, characterized in that the spacer is provided with an annular bearing surface (2a) without internal guide surfaces, for example guide surfaces in the form of squares or hexagonal surfaces.
11. Arrangement according to any of Patent Claims 5 to 10, characterized in that the holder and its attachment to the spacer and the screw are arranged to permit a first anchoring contact between the top surface of the implant and the bearing surface of the spacer which eliminates the risk of loosening of the implant in the bone (5), and, after the holder has been removed, the screw can be tightened to obtain a second anchoring contact which is effected with a force which considerably exceeds the force for the first anchoring contact.
12. Arrangement according to Patent Claim 11, characterized in that the second anchoring contact is effected by means of a counterstay function in the spacer.
13. Arrangement according to any of Patent Claims 5 to 12, characterized in that the thread of the screw is made of relatively strong material and/or is coated with a friction-reducing coating for the purpose of improving the anchoring stress between spacer, screw and implant.
14. Arrangement according to any of Patent Claims 5 to 13, characterized in that the thread diameter of the screw is substantially less than the diameter of the bearing surface and is, for example, half the last-mentioned diameter.
15. Arrangement according to Patent Claim 14, characterized in that by choosing the diameter of the screw thread and the diameter of the bearing surface and by choosing low-friction material and/or low-friction coating, the coefficient of friction is substantially lower, for example half as great, at the thread as it is at the bearing surface, which means

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that a secure counterstay can be applied against the outside of the spacer upon further tightening, despite the absence of mechanical locking via active locking surfaces between the spacer and the implant.

5 16. Arrangement of a spacer (2) and a tightening screw (3) for an implant (4) for bone, preferably dentine (5), and a holder for the spacer and screw for facilitating application of the spacer and screw to the implant, characterized in that the holder supports the
10 spacer and the screw in a rotationally fixed manner, with the bearing surface (2a) of the spacer, which is intended to bear against a top surface of the implant, protruding beyond the holder, and with the screw extending through the spacer and protruding beyond the
15 bearing surface via its threaded part.

17. Arrangement according to Patent Claim 16, characterized in that the holder is designed with an end recess for the spacer and the screw head.

20 18. Arrangement according to Patent Claim 16 or 17, characterized in that the spacer and the screw head assume rotationally fixed positions in the holder by virtue of the fact that the latter is made of resilient and/or elastic material at least at the said recess, and the holder with resilient and/or elastic function
25 cooperates with the spacer and the screw head.

19. Arrangement according to Patent Claim 16, 17 or 18, characterized in that the rotationally fixed attachment is also effected by a snap-in function and in that, for example, the spacer is designed with ribs
30 and/or indents (2f, 2g) for the said snap-in function.

20. Arrangement according to any of Patent Claims 16 to 19, characterized in that, when the spacer and screw are positioned on the implant, the holder can be separated from the spacer and the screw head for
35 longitudinal displacement in the longitudinal direction of the implant and/or a tilting movement.

21. Arrangement according to any of Patent Claims 16 to 20, characterized in that the holder, the spacer

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and the screw form a rotationally fixed unit, by means of which the thread of the screw can be screwed into the thread of the implant by screwing movements.

22. Use of a holder (1) for securing a spacer (2) with a screw (3) in an implant (4), characterized in that the holder (1) used is an elongate element which supports the spacer and the screw in their coupled state in a rotationally fixed manner, with the bearing surface (2a) of the spacer against the corresponding bearing surface (4b) of the implant protruding beyond the holder, and the threaded part (3a) of the screw protruding beyond the bearing surface (2a).

23. Use according to Patent Claim 22, characterized in that a resilient and/or elastic part (1b) of the holder is used for gripping around and securing the spacer and the screw in rotationally fixed positions in relation to each other and to the holder.

24. Use according to Patent Claim 22 or 23, characterized in that the holder is used for transmitting manual rotation movements to the screw as the latter is screwed into the implant.

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